Abstract for the conference "High Speed Photography and Photonics", Sante Fe, NM, Oct. 28-Nov. 1.

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By the use of two image-superimposing interferometers in series with the target interposed, velocity interferograms can be made of 2-d surface targets using uncollimated white light illumination. The unlimited bandwidth capability allows the use of femtosecond lasers to provide high time resolution in velocimetry, and eliminates integer fringe ambiguity. The use of chirped pulses and a diffraction grating on output comprises an all optical streak camera having picosecond resolution. We present a demonstration image of a 2-d target whose velocity changes across its surface from 3 m/s to 20 m/s and was illuminated by a small camera flash.

This work was performed under the auspices of the U.S. Dept. of Energy at LLNL under contract no. W-7405-Eng-48.